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February 19—Dr. Eugene L. Opie, The Rockefeller Institute, "Inflammation."

March 5—Professor Adolf Meyer, Johns Hopkins University, "The Present Status of Aphasia and its relation to Psychopathology."

March 19—Professor A. Magnus-Levy, University of Berlin, "Pathology and Therapy in Diseases of Metabolism."

THE International Committee for the Study of Methods of Control of Bovine Tuberculosis will hold its first meeting at Buffalo on December 13.

THE German National Museum at Munich has asked Dr. Lowell, director of the Lowell Observatory, for records of the observatory's work for their archives and permanent exhibition, comprising: (1) A series of photographs of Mars; (2) photographs of Jupiter; (3) spectra of Mars showing water vapor and comparison spectra; (4) spectra of the other planets; (5) the characteristic star spectra exhibited at Dresden last summer by Mr. Slipher.

THE annual exhibition of apparatus by the Physical Society of London will be held on December 14, when the exhibition will be open from 3 to 6 in the afternoon and from 7 to 10 in the evening.

THE chancellor of the University of Kansas is the state sealer of weights and measures, and Chancellor Strong has just caused to be mailed to the county officers concerned and others interested, copies of a bulletin on Kansas Weights and Measures. This bulletin gives specifications for town, city and county standards, and instructions to sealers and inspectors, and also the laws of Kansas relating to weights and measures. In the introduction to the bulletin, the chancellor says that "Though not at present fully recognized, the sealer of weights and measures should be one of the most important public officials in his community."

UNIVERSITY AND EDUCATIONAL NEWS.

THE Catholic University of Washington will receive \$120,100 by the will of Mrs. Emily Lusby, of Baltimore.

THE *Educational Times* states that the committee appointed by the British chancellor of the exchequer to consider the apportionment of the £15,000 additional grants which he proposes to give to the University of Wales and its three constituent colleges have recommended the following allocation, viz., £1,500 per annum to the university for fellowships in arts and sciences; £1,500 a year to the Cardiff Medical School; £4,000 each to the colleges at Bangor, Aberystwyth, and Cardiff to provide increased salaries to the staffs, further equipment for libraries and museums and provision for tutorial assistance; and £500 each towards establishing a pension scheme.

THE University of Glasgow has received, from Miss Pollock and Mrs. Gilchrist, sisters of the late Dr. Robert Pollock, notice that they intend, in accordance with their brother's wishes, to bequeath to the university £10,000 for the foundation of a lectureship in *materia medica* for the encouragement of research.

DR. WILLIAM DEY, for many years a member of the University Court, Aberdeen, and his brothers have given £2,500 to the university to found a scholarship in education in memory of their father.

A SYNDICATE has been appointed at Cambridge University to consider the question of providing pensions for professors and others in the service of the university.

DR. J. S. SHEARER has been promoted to a professorship in physics at Cornell University.

MR. EDGAR I. WENGER, associate in railway engineering at the University of Illinois, has been appointed assistant professor of electrical engineering at McGill University.

AT the University of North Dakota A. H. Taylor, Ph.D. (Göttenberg) has been appointed head of the department of physics, vice G. W. Stewart, Ph.D., now of the University of Iowa, and H. E. Simpson, M.A. (Harvard), formerly professor of geology in Colby College, assistant professor of geology. J. E. Rhodes, M.E. (Clemson), has been appointed instructor in mechanical drawing; Alfred A. McAlister, M.E. (Ohio State), instructor in mining and electrical engineering;

H. W. Daudt, M.S. (Harvard), assistant in chemistry, and Miss Florence Balch, M.A. (Columbia), instructor in mathematics.

THE following appointments have been made in the School of Mining, Kingston, Ont.: M. B. Baker, B.A., B.Sc., advanced from lecturer to professor of geology; Leo F. Guttman, Ph.D., assistant professor of chemistry; R. J. Manning, M.A., lecturer on chemistry; W. D. Bonner, M.A., lecturer on chemistry; J. Robertson, M.A., lecturer on physics; G. H. Herriot, B.Sc., lecturer on mathematics; S. N. Graham, B.A., B.Sc., lecturer on mineralogy; J. A. McCrae, M.A., M. L. Hersey fellow in chemistry; B. Rose, B.Sc., assistant in mineralogy; B. E. Norrish, B.Sc., assistant in drawing.

THE council of King's College, London, have appointed Dr. David Waterston as professor of anatomy, in succession to Professor Peter Thompson, appointed professor of anatomy in Birmingham University. Dr. Waterston was lecturer in anatomy in the University of Edinburgh. Dr. George C. Low has been elected lecturer in parasitology and medical entomology.

MR. W. S. ABELL, instructor in naval architecture at the Royal Naval College, Greenwich, has been appointed to the chair of naval architecture in Liverpool University, endowed by Mr. Alexander Elder.

DR. E. VON TSCHERMAK has been appointed professor at the Hochschule für Bodenkultur, Vienna.

DISCUSSION AND CORRESPONDENCE

THE EFFECTS OF RAPID AND PROLONGED DEEP BREATHING

THE following results of simple experiments may be of sufficient general interest to warrant publication in the columns of *SCIENCE*. They are in no sense new, but are described by way of emphasizing important facts which have been generally neglected and not with any pretense to originality.

The experimental results to which I refer show the effect of enforced deep breathing

over a period of several minutes on various functions of the human body. These effects are of several kinds and a few of the simpler ones may be summed up as follows: (1) material increase in the length of time the system can do without respiration; (2) effective mental stimulant; (3) material increase in physical endurance for a short time; (4) rise in the frequency of pulse beat.

1. It has been noticed by others that deep violent breathing for several minutes so changes the system as to make respiration unnecessary for perhaps as much as five minutes after this preparatory breathing is over. In my own case I have found that four minutes' enforced breathing makes it possible to hold the breath for three minutes and a half, whereas without this preparation 56 seconds was my limit. The time during which it is possible to do without respiration increases, of course, with the length of time during which the preparatory breathing is carried on. The increase does not go on indefinitely, but reaches a definite limit, beyond which further length of time given to preparatory breathing does not increase the time during which the breath may be held. Below is a table taken from a curve which represents experiments on myself. The limit (3 minutes 34 seconds)

- (a) Length of time in minutes devoted to deep breathing.
 (b) Time in minutes and seconds during which the breath may be held after preliminary breathing is stopped.

(a)	0	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	2	3	4
(b)	0.56	1.24	1.39	1.54	2.12	3.00	3.26	3.34

which is indicated in this table would doubtless differ with different people. It should be noticed that the preparatory breathing is effective long after the "washing out" of the lungs must have been completed. The change produced in the system is certainly, therefore, more fundamental than a lung change, and would appear to a layman to indicate a temporary change in blood constitution.

2. The effect as a mental stimulant is very pronounced. I have noticed in my own case that mental fatigue may be postponed, far beyond the usual point, by two minutes of